

## ABSTRACT

A method for simultaneous generation of motion paths depending on changes of internal and external sizes of an object by a direction map for a 2-dimensional geometric figure, includes respectively expressing specific obstacle A and object B inputted through an input unit, by direction maps; merging the direction maps respectively expressing the obstacle and the object; determining Minkowski operation after sizes of the obstacle and the object are determined; performing a necessary group unit based size control operation for a direction map obtained by merging each of the direction maps of the obstacle and the object in the second step; performing collinear elimination for the result obtained in the fourth step, performing a direction map inverse operation, and performing a trimming operation to generate the motion path; and calculating a c-space obstacle for obstacle and object having different external and internal sizes.